Enhancing Citizen *E. coli* Monitoring in Streams in the Upper Midwest

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Regional Water Quality Program

Funding

- Source: CSREES, Integrated Research, Extension, Education Project
- $275,000 to 6 states
- October 1, 2003 – September 30, 2006

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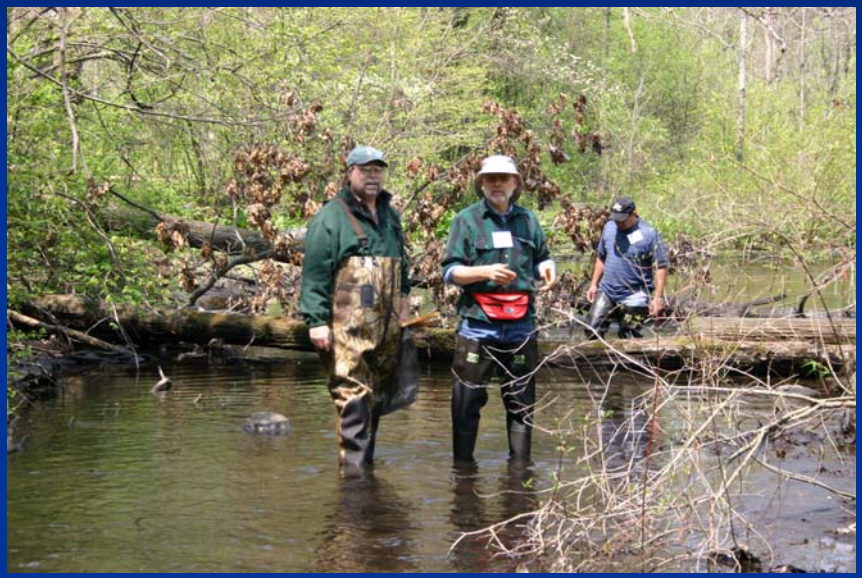
Project Goals

- To determine the accuracy and reliability of *E. coli* test kits when used by volunteers
- To recommend a test kit for use by volunteers
- To produce training curriculum and educational materials for volunteers and general audiences

Why Citizens Monitoring Bacteria?

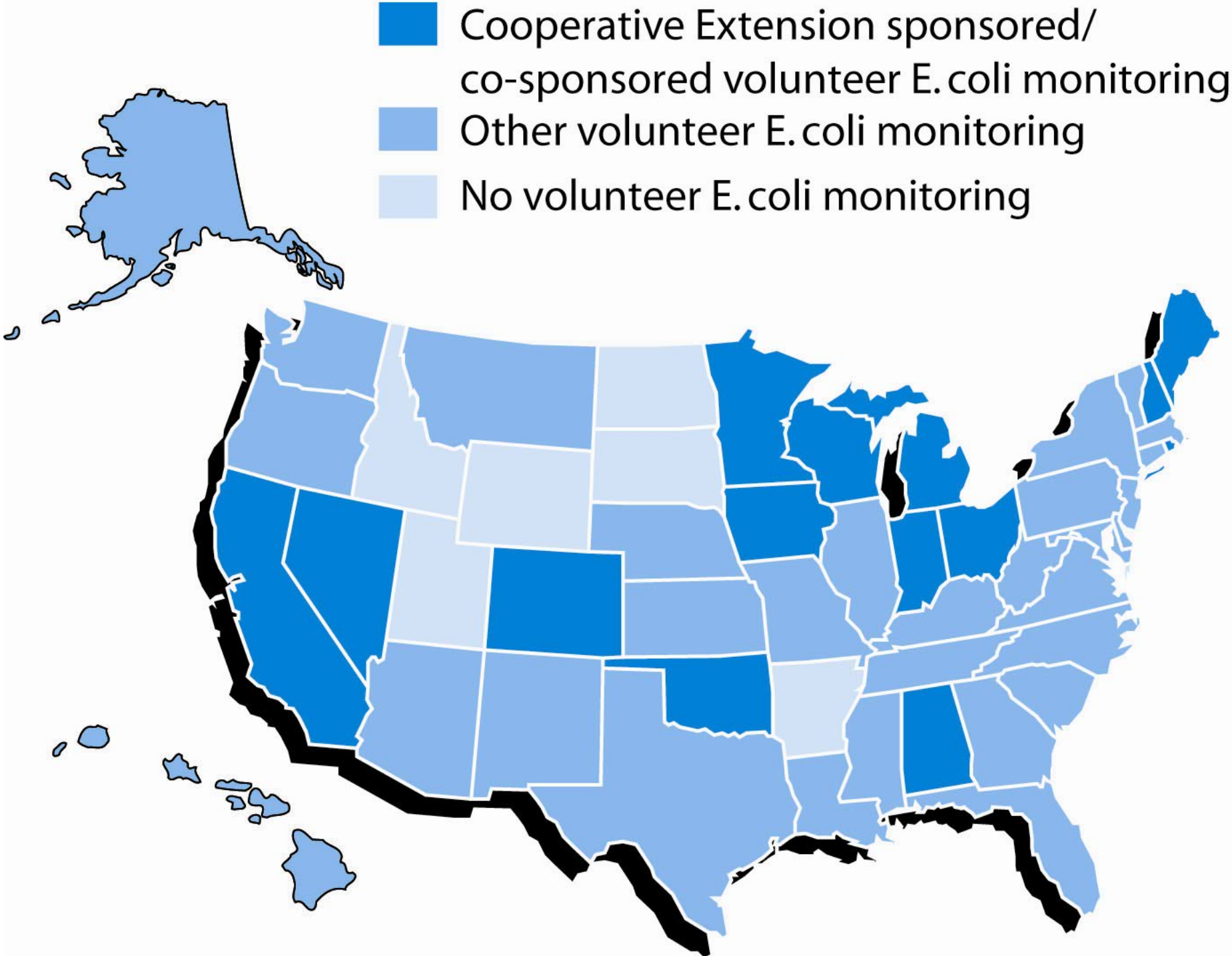
- Volunteers extend limited agency resources
- Citizens are interested and knowledgeable about their local streams
- Citizens want an easy, reliable, inexpensive test kit
- Beach closings have caught public attention

Why research *E. coli* test kits?



- Waters impaired by bacteria across U.S.
- Bacteria TMDLs being developed
- There's a need for simple, inexpensive tests
- Cost of lab analysis may be prohibitively high and access to labs problematic

- Many different kits being used
- No comparative, independent study of how well kits work

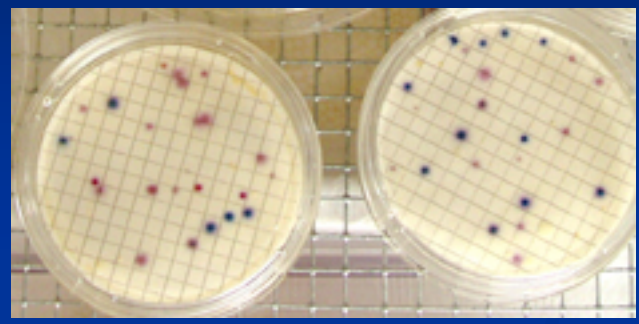

Cooperative Extension sponsored/
co-sponsored volunteer E. coli monitoring
Other volunteer E. coli monitoring
No volunteer E. coli monitoring

Project Overview

- Year 1
  - Establishing consistent sampling & analytical protocols
  - Pilot testing 5 kits in 2 states → recommendation
  - Developing training and supporting materials
- Year 2
  - Implementing recommendation in 6 states
  - Evaluating data and training methods
- Year 3
  - Sharing results and materials
  - Continuing watershed monitoring support

Testing 5 methods – Iowa & Indiana

- 5 Kits:
  - Coliscan® Easy Gel (incubated)
  - Coliscan® Easy Gel (not incubated)
  - 3M™ Petrifilm™
  - Coliscan® MF Method Kit
  - Colisure® Method with IDEXX Quanti-Tray/2000™
- Testing spring & summer, 2004
- Will recommend the 'best' kit for volunteers
- Based on accuracy, reliability, cost, ease of use …



Quality Assurance - Analysis

- Using one lab in Iowa for pilot samples
- Using certified labs for all phases
- Splits and replicates for both lab samples and test kits
- Centralized data management and statistical analysis

Quality Assurance – Volunteer Training

- Explicit protocols and instructions
- Pre/post surveys of volunteer experience, knowledge, and goals
- Consistent training methods across the region for volunteers
- Three year project to test and refine training methods

Developing Materials

- Visual identifier
- General fact sheets
- Training curriculum (technical background and pedagogy)
- Pre/post tests, survey instruments
- Other outreach & promotional materials
- Results of research and outreach efforts (evaluation component)

Implementing Recommendation

- IA and IN will transition volunteers to recommended procedure
- MN, MI, OH, WI will support teams of volunteers in multiple watersheds
- Samples will be collected for analysis by test kits and certified lab
- Will continue to track accuracy and user preferences

Evaluating Data and Training Methods

- Comparing accuracy of lab vs kit analyses
- Pre/post testing to assess effectiveness of training and knowledge gained
- Volunteers' results will be tracked by past experience, training, and frequency
- Volunteers and trainers will be surveyed about methods and protocols

Sharing Results –
project ends 9/2006

- Recommendation whether to use *E. coli* test kits with volunteers
- Which kit(s) have best accuracy and user satisfaction?
- Do volunteers and agency partners support the use of test kits and data generated?
- Disseminating fact sheets, training curriculum, forms, surveys, via print and electronic versions

Anticipated outcomes

Achieve excited, competent, engaged volunteers

Ensure quality useful and usable water quality data